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and also with a water battery belonging to Professor Daniell, consisting of 1020 series; but when a Leyden battery of nine jars was introduced into the circuit of the latter, sparks passed to the extent, in one instance, of six five-thousandths of an inch.

The author mentions his having been present at the experiment of Professor Daniell, on the 16th of February, 1839, when that gentleman had 70 series of his large constant battery in action; and having been witness of the powerful effects obtained by this apparatus, he was induced to prepare 100 series of precisely the same dimensions, and similarly excited: but although this powerful apparatus was used under every advantage, and the other effects produced were in every respect in accordance with the extent of the elements employed, still no spark could be obtained until the circuit was completed; *even a single fold* of a silk handkerchief, or a piece of dry tissue paper, was sufficient to insulate the power of a battery, which, after the circuit had been once completed, fused titanium, and heated 16 feet 4 inches of No. 20 platinum wire.

The author then describes a series of experiments made with induced currents. Twelve hundred and twenty iron wires, each insulated by resin, were bent into the form of a horse-shoe. A primary wire of 115 feet and a secondary of 2268 feet, were wound round the iron wires. With this arrangement he obtained a direct spark (through the secondary current), sufficient to pierce paper, to charge a Leyden jar, &c. Several forms of apparatus employed by the author are next described, and also a series of 10,000 of Jacobone's piles. With this arrangement he charged a Leyden battery to a considerable degree of intensity, and obtained direct sparks of three-fiftieths of an inch in length. He ultimately succeeded in obtaining chemical decompositions of a solution of iodine and potassium, the iodine appearing at the end composed of the black oxide of manganese.

The Society then adjourned over the Christmas Vacation, to meet again on the 9th of January, 1840.

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January 9, 1840.

JOHN WILLIAM LUBBOCK, Esq., V.P. and Treasurer, in the Chair.

John Augustus Lloyd, Esq., who, at the last Anniversary, had ceased to be a Fellow, from the non-payment of his annual contribution, was at this meeting re-admitted by ballot into the Society, agreeably to the provision of the Statutes.

James Whatman, Jun., Esq., M.A., was balloted for, and duly elected into the Society.

A paper was read, entitled, "On the construction and use of Single Achromatic Eye-Pieces, and their superiority to the double eye-piece of Huyghens." By the Rev. J. B. Reade, M.A., F.R.S.

The author observes, that experience has shown it to be impracticable to make a telescope even approach to achromatism, by employing the same object-glass with an astronomical, as with a terrestrial eye-piece: for if the focus of the blue rays from the object-glass be thrown forwards, as it must be in order to make it impinge upon the focus of the blue rays of the terrestrial eye-glass, then there will be produced a great *over-correction* for the astronomical eye-glass; and *vice versa*. Hence it appears that the application of Huyghenian eye-pieces to refracting telescopes, is incompatible with the conditions of achromatism, throughout the entire range of magnifying power; and that in reflecting telescopes they unavoidably introduce dispersion, because they are not in themselves achromatic. These defects the author proposes wholly to obviate, by substituting for the Huyghenian eye-pieces, single achromatic lenses of corresponding magnifying power; consisting of the well-known combination of the crown-lens, and its correcting flint-lens, having their adjacent surfaces cemented together; thus avoiding internal reflections, and enabling them to act as a single lens. The achromatic eye-pieces which he uses were made by Messrs. Tulley and Ross, and are of the description usually termed *single cemented triples*.

A paper was also read, entitled, "Meteorological Observations made between October, 1837, and April, 1839, at Alten in Finnmarken." By Mr. S. H. Thomas, chief mining agent at the Alten Copper Works. Presented to the Royal Society by John R. Crowe, Esq., Her Britannic Majesty's Consul at Finnmarken. Communicated by Major Edward Sabine, R.A., V.P.R.S.

This memoir consists of tables of daily observations of the barometer and thermometer, taken at 9 A.M., 2 P.M., and 9 P.M., with remarks on the state of the weather, at Kaafjord, in latitude  $69^{\circ} 58' 3''$  north, and longitude  $23^{\circ} 43' 10''$  east of Paris.

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January 16, 1840.

JOHN WILLIAM LUBBOCK, Esq., V.P. and Treasurer, in the Chair.

A paper was read, entitled, "On Nobili's Plate of Colours; in a Letter from J. P. Gassiot, Esq., addressed to J. W. Lubbock, Esq., V.P. and Treasurer R.S." Communicated by J. W. Lubbock, Esq.

The effect produced by the late Signor Nobili, of inducing colours on a steel plate, excited the curiosity of the author, and led him to the invention of the following method of producing similar effects. Two of Professor Daniell's large constant cells were exci-